Math 357
Long quiz 03A

2024–02–05 (M)

Your name: _____

Let R be an integral domain, and let t be an indeterminate. Consider the polynomial ring $R[t]$.

(a) Prove that $(R[t])^{\times} \cong R^{\times}$. That is, we may view the units of $R[t]$ to be exactly the units of R.
Hint: $\deg(pq) = \ldots$

(b) Now let R be a commutative ring with a $1 \neq 0$. Give an example to show that the isomorphism in part (a) can fail.